FIG. 1


10
IMAGE INPUT MEANS
11
OI ORTHOGONAL TRANSFORMING MEANS
100
LFC EXTRACTING MEANS
101
RI GENERATING MEANS
102
RI DISPLAY MEANS
13
HFC ENCODING MEANS
14
CODES SYNTHESIZING MEANS
15
STORAGE MEDIUM
16
LFC DECODING MEANS
17
HFC DECODING MEANS
18
OI OUTPUT MEANS

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FIG. 2

TOCT60*9E:9E660

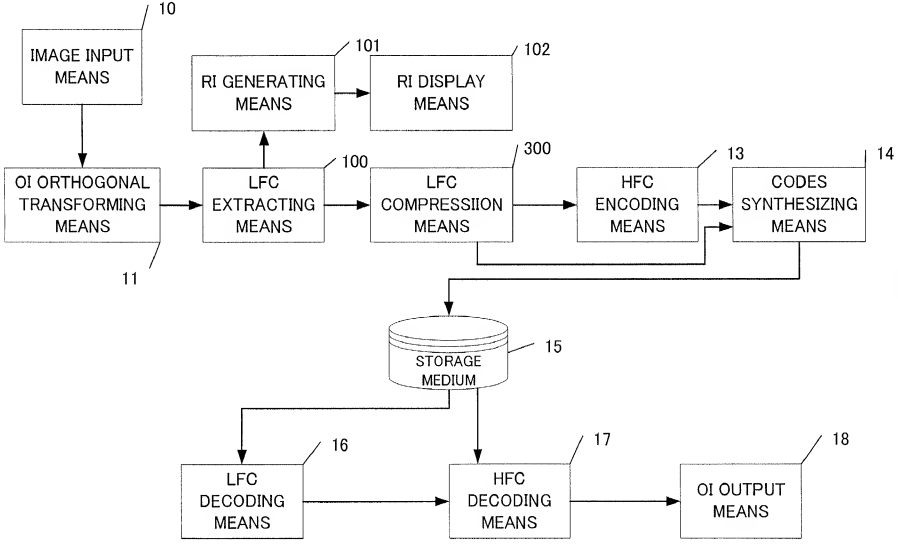


FIG. 3

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TOET60*9E+9E660

(a)

| | |
|---|---|
| D1 | D2 |
| D3 | Dx |

(b)ENCODING

SELECT PREDICTION FORMULA FROM (B) → Ex = Dx − dDx → ENCODE EXAMPLE WITH ENTROPY

(c)DECODING

DECODE EXAMPLE WITH ENTROPY → Dx = dDx + Ex

FIG. 4

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FIG. 5

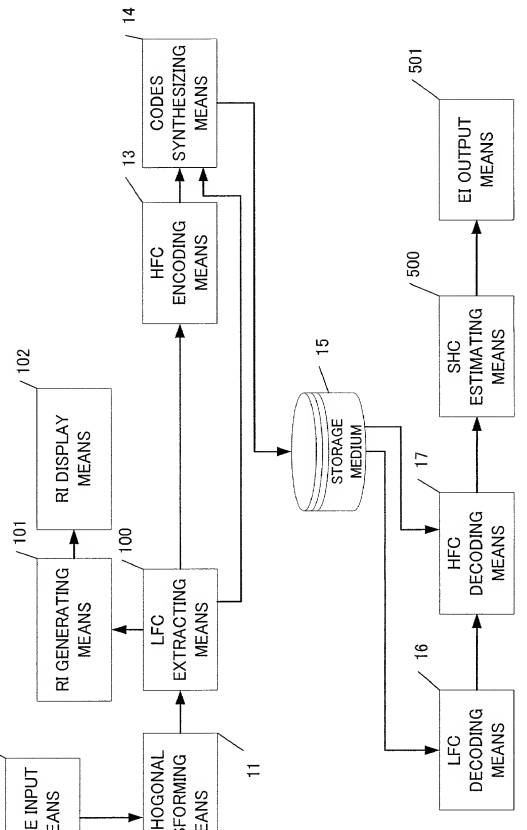
10
IMAGE INPUT MEANS
11
OI ORTHOGONAL TRANSFORMING MEANS
100
LFC EXTRACTING MEANS
101
RI GENERATING MEANS
102
RI DISPLAY MEANS
13
HFC ENCODING MEANS
14
CODES SYNTHESIZING MEANS
15
STORAGE MEDIUM
16
LFC DECODING MEANS
17
HFC DECODING MEANS
500
SHC ESTIMATING MEANS
501
EI OUTPUT MEANS

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FIG. 6

TOE160"9Eh9E660

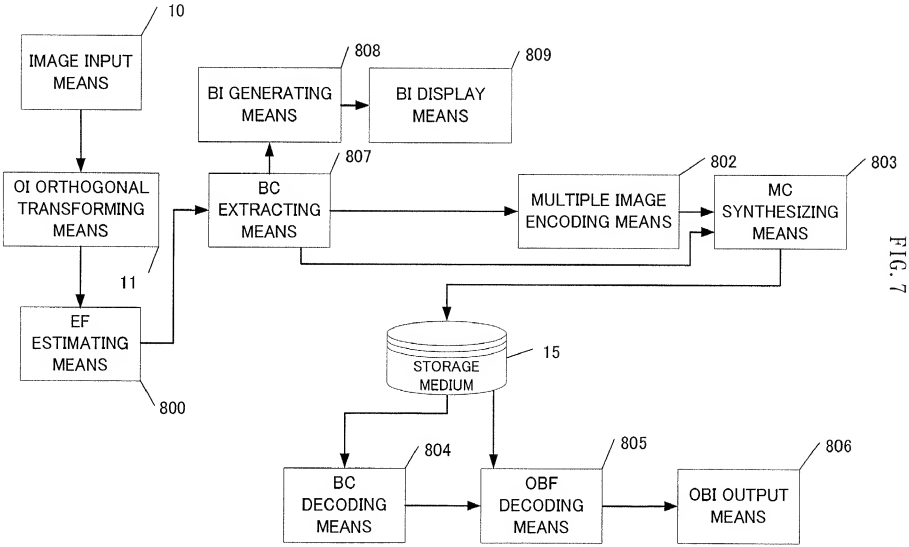


FIG. 7

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FIG. 8

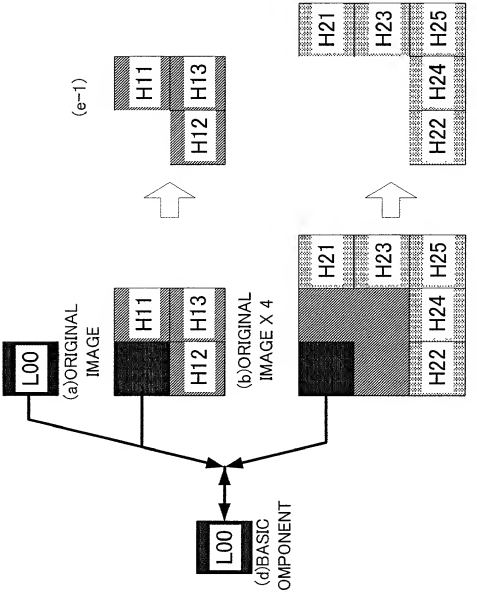
L00
(a)ORIGINAL IMAGE
H11
H12
H13
(b)ORIGINAL IMAGE X 4
H21
H22
H23
H24
H25
(c)ORIGINAL IMAGE X 9
L00
(d)BASIC COMPONENT
(e-1)
(e-2)

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FIG. 9

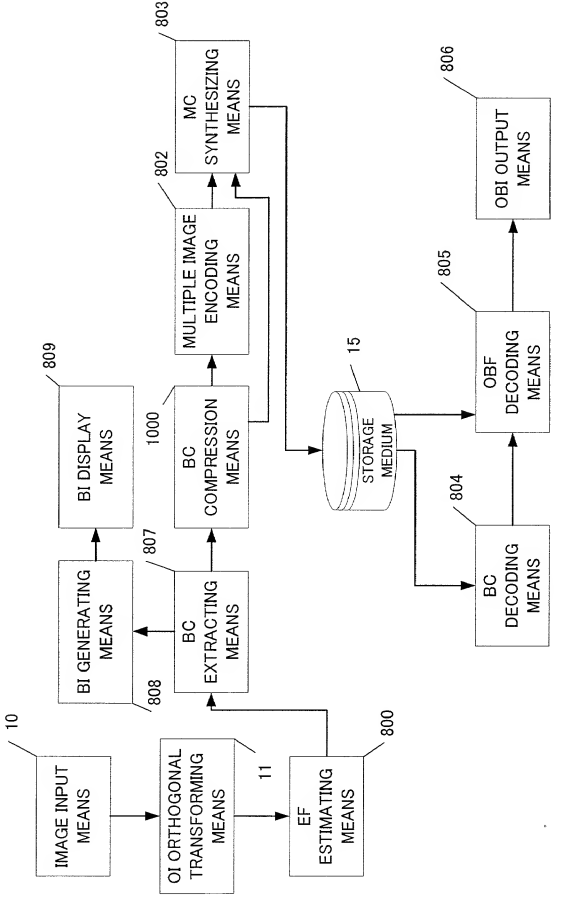

FIG. 10

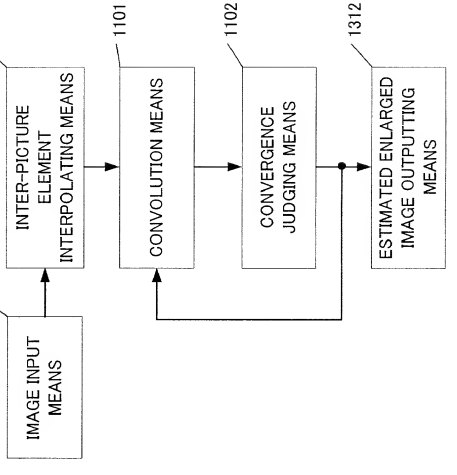
10
IMAGE INPUT MEANS
1100
INTER-PICTURE ELEMENT INTERPOLATING MEANS
1101
CONVOLUTION MEANS
1102
CONVERGENCE JUDGING MEANS
1312
ESTIMATED ENLARGED IMAGE OUTPUTTING MEANS

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FIG. 11

TOET60*9E#9E660

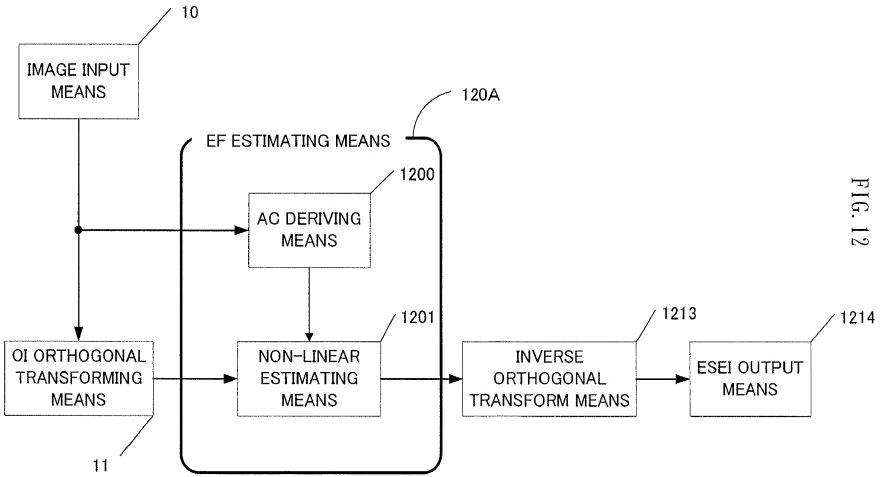


FIG. 12

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FIG. 13

TOEI60*9EA9E660

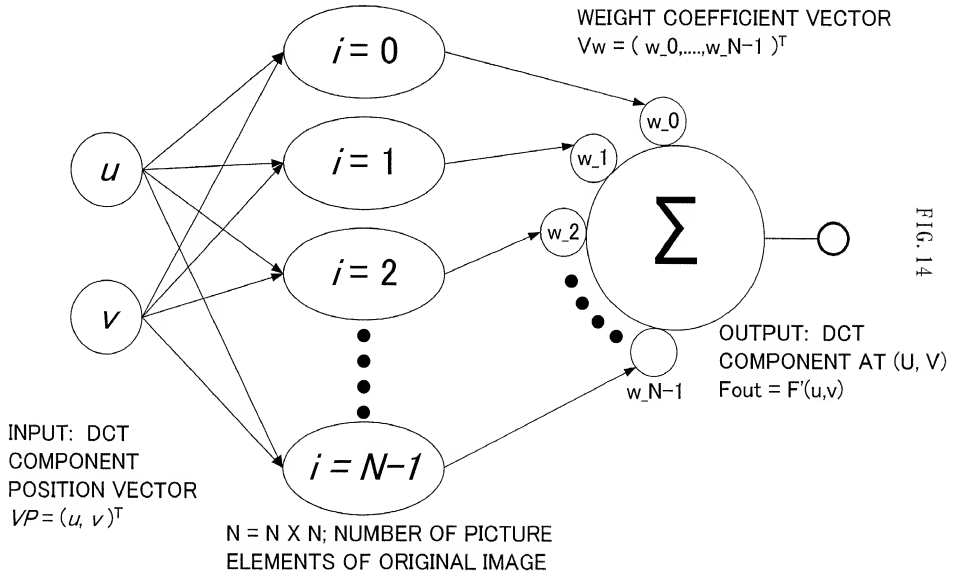


FIG. 14

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TOET60"9Eh9E660

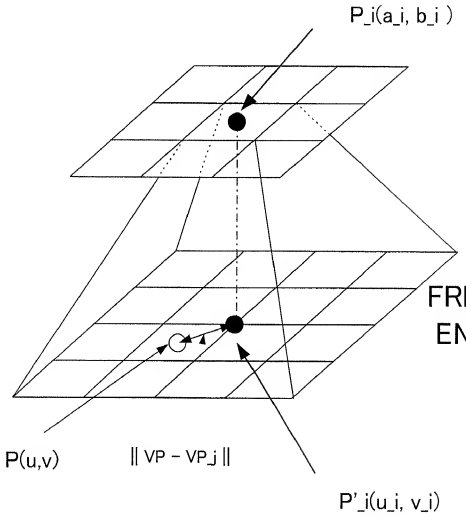


FIG. 15

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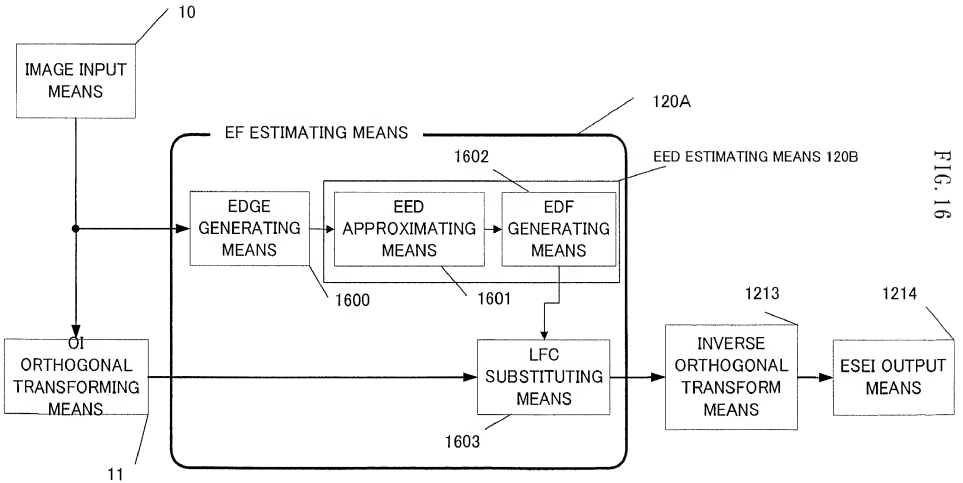


FIG. 16

JP02003018460A

FIG. 17

FIG. 18

| | | |
|---|---|---|
| -1 | -1 | -1 |
| -1 | 8 | -1 |
| -1 | -1 | -1 |

(a)

| | | |
|---|---|---|
| 0 | -1 | 0 |
| -1 | 4 | -1 |
| 0 | -1 | 0 |

(b)

EDET60*96h9E660

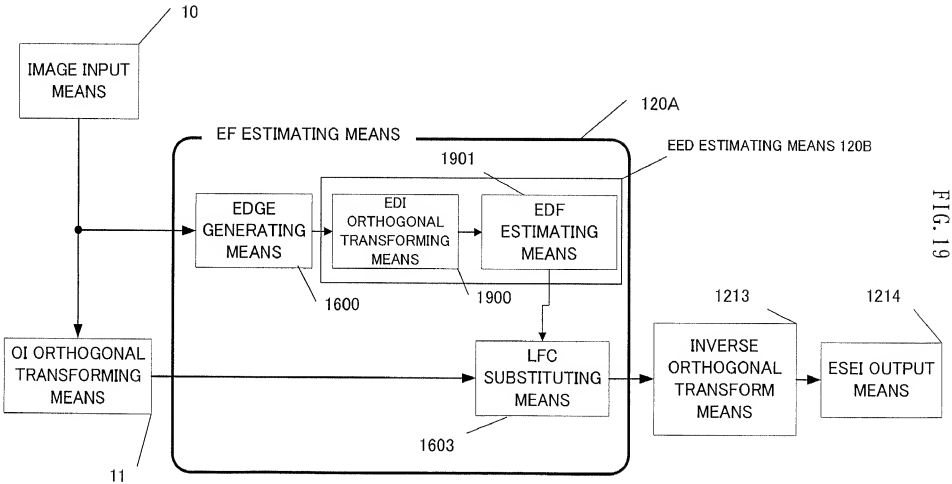


FIG. 19

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09936436

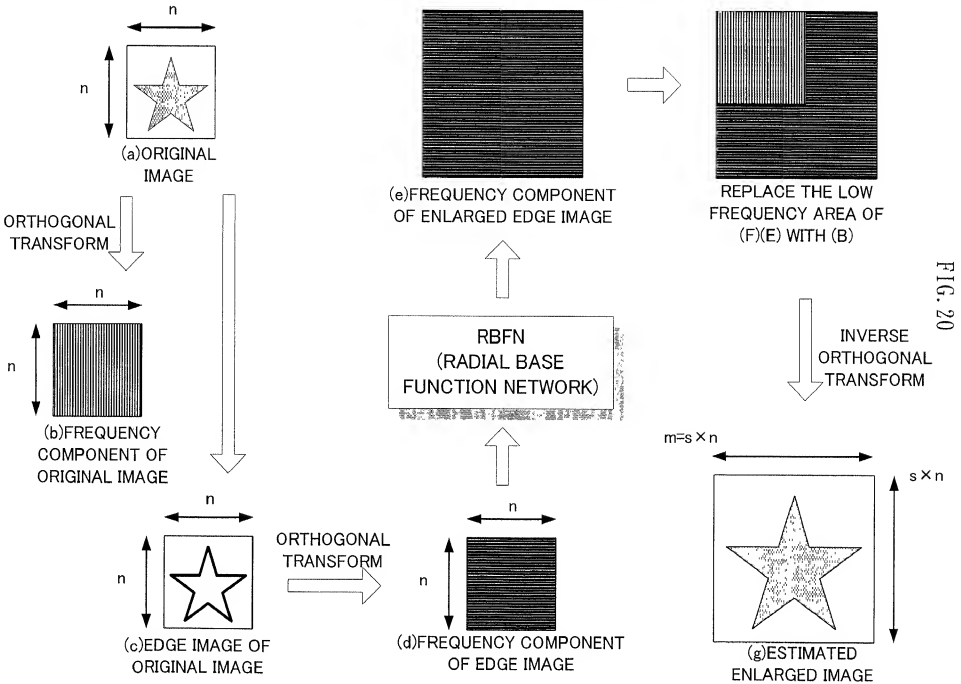


FIG. 20

FIG. 21


(a)
DCT COMPONENT F (U, V_0) IN U DIRECTION
DCT COMPONENT F (U, V_0)
H
G
SAMPLED DCT COMPONENT
U DIRECTION
0
n-3
n-2
n-1
(b)
DCT COMPONEN T F (U, V_0)
COMPONENT POSITION AFTER ENLARGEMENT (U DIRECTION)
n-1+t-4
n-1+t-3
n-1+t-2
n-1+t-1
n-1+t

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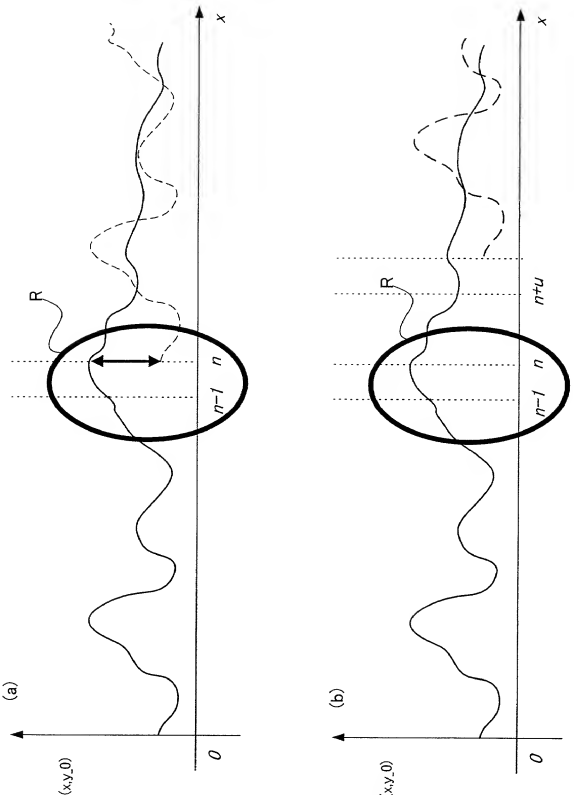
FIG. 22



TDET60"9E+9E660

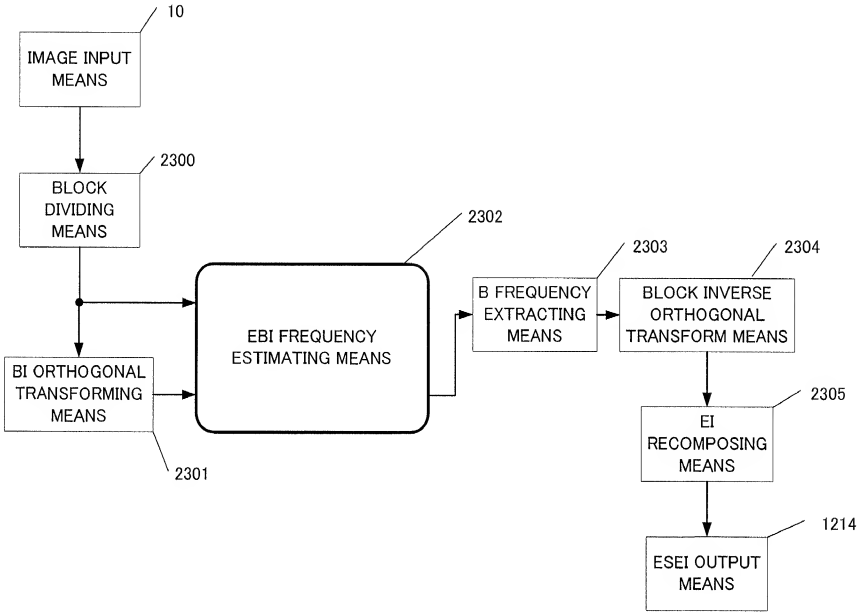



FIG. 23

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FIG. 24


BLOCK B0'
m
(n+u) × s
A0 FREQUENCY AREA
m
(n+u) × s
N
BLOCK A1'
BLOCK A0'
n
n+u
n+u
n+u
n+u
N
N

FIG. 25

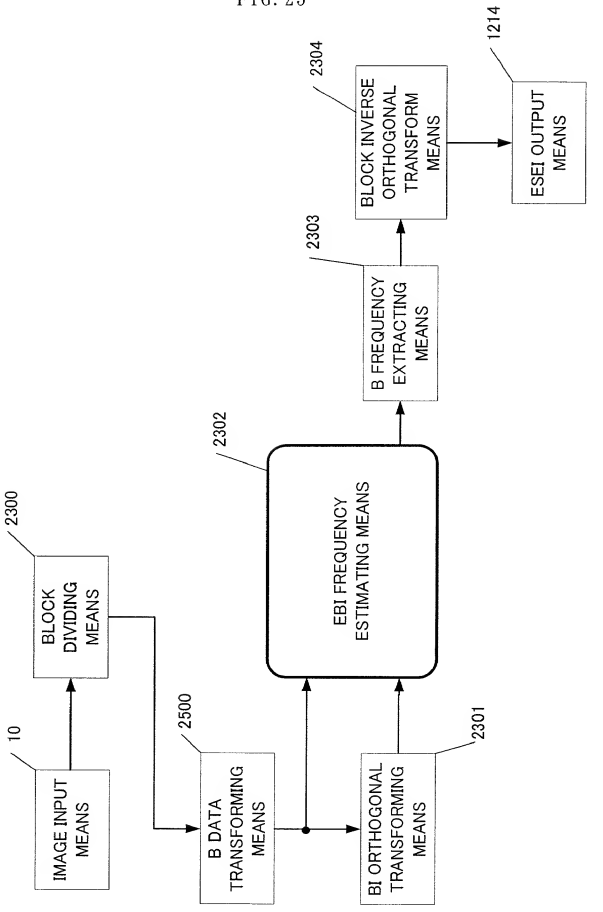
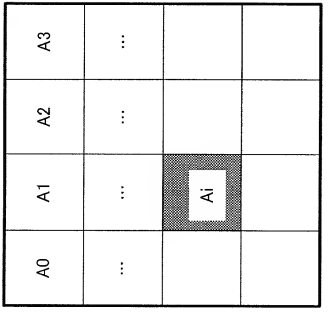

10
IMAGE INPUT MEANS
2300
BLOCK DIVIDING MEANS
2500
B DATA TRANSFORMING MEANS
2301
BI ORTHOGONAL TRANSFORMING MEANS
2302
EBI FREQUENCY ESTIMATING MEANS
2303
B FREQUENCY EXTRACTING MEANS
2304
BLOCK INVERSE ORTHOGONAL TRANSFORM MEANS
1214
ESEI OUTPUT MEANS

FIG. 26



09936436.091301

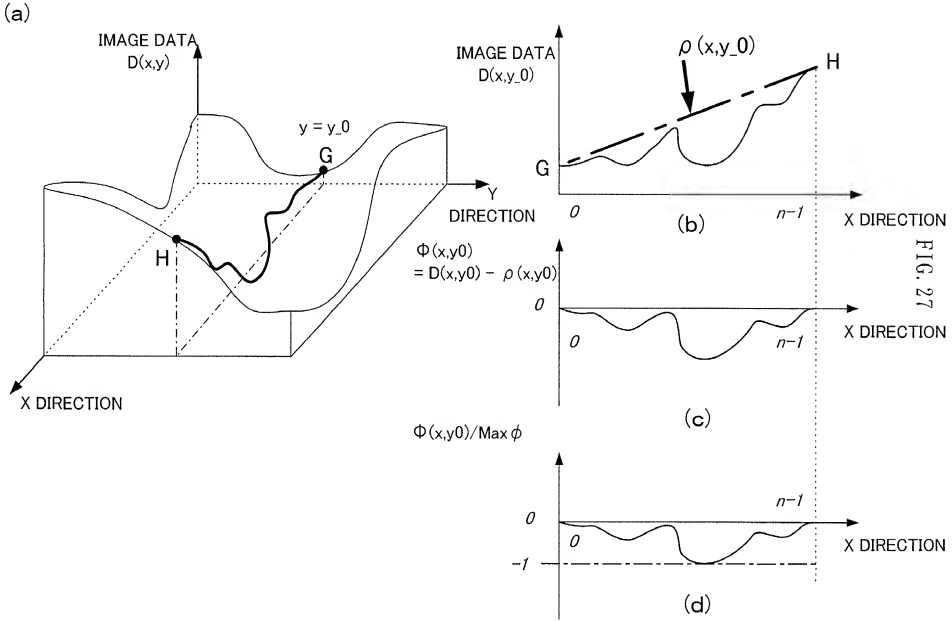



FIG. 27

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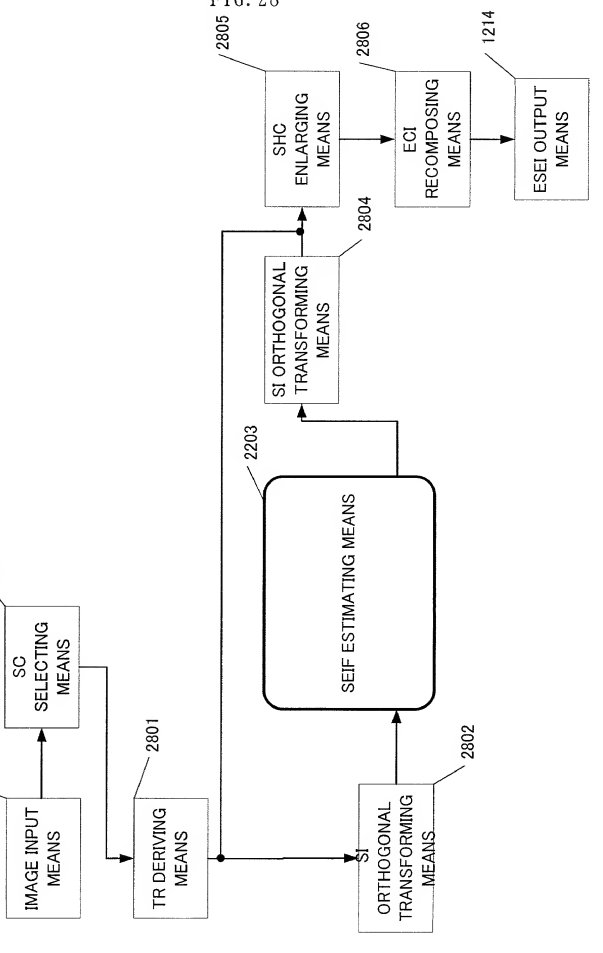
FIG. 28


10
IMAGE INPUT MEANS
2800
SC SELECTING MEANS
2801
TR DERIVING MEANS
SI
2802
ORTHOGONAL TRANSFORMING MEANS
2203
SEIF ESTIMATING MEANS
2804
SI ORTHOGONAL TRANSFORMING MEANS
2805
SHC ENLARGING MEANS
2806
ECI RECOMPOSING MEANS
1214
ESEI OUTPUT MEANS

TOET60*9EA9E660

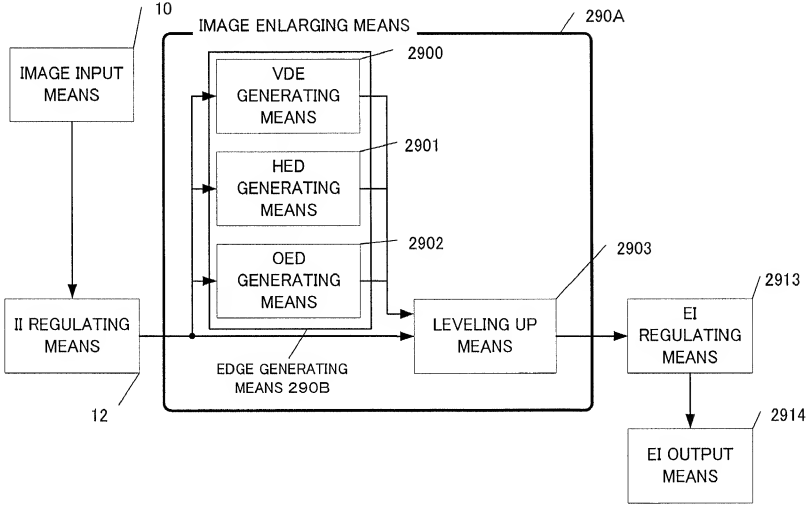



FIG. 29

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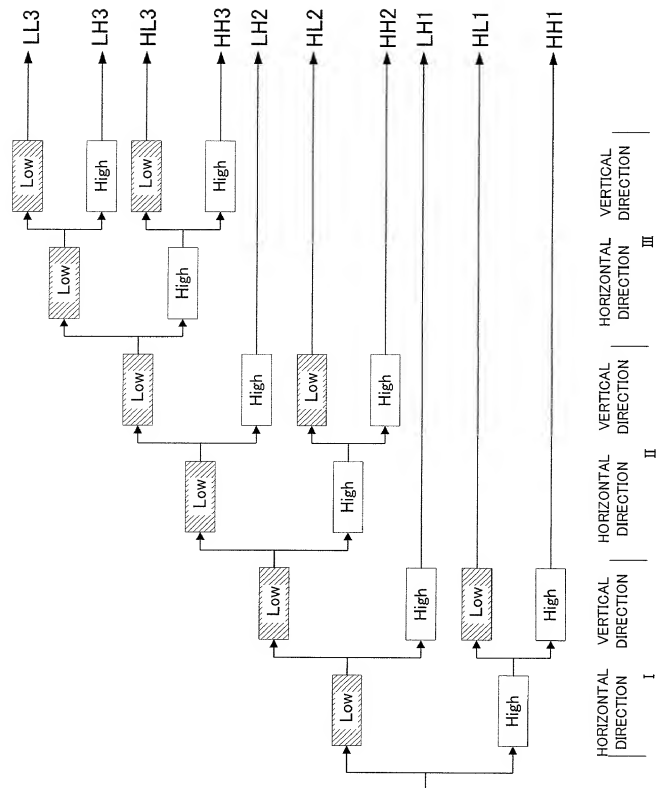
FIG. 30


LL3
LH3
HL3
HH3
LH2
HL2
HH2
LH1
HL1
HH1
Low
High
HORIZONTAL DIRECTION
VERTICAL DIRECTION
I
II
III

09/936436

FIG. 31

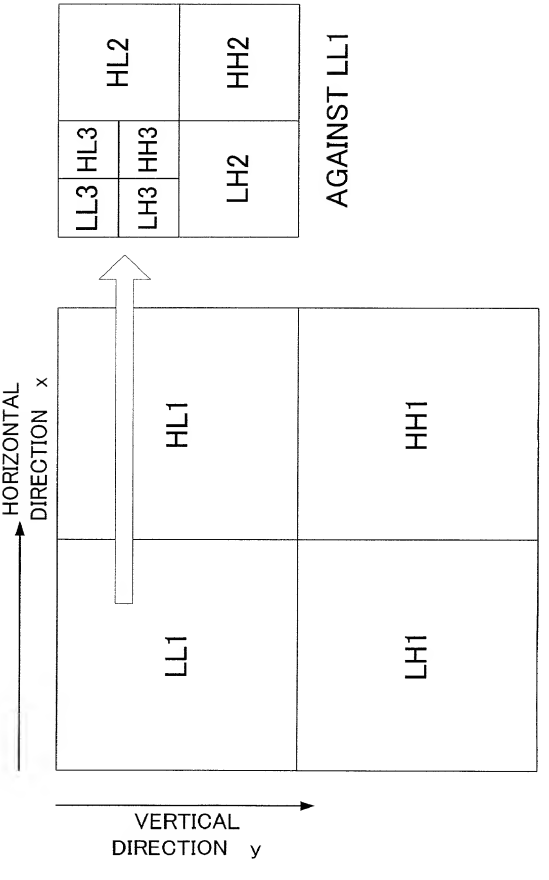


FIG. 32


(a)ORIGINAL IMAGE
m
m = dLn/2
(b)VERTICAL EDGE PORTION
(c)HORIZONTAL EDGE PORTION
(d)OBLIQUE EDGE PORTION
LL0
HL0
LH0
HH0
2m
2m
(e)WAVELET TRANSFORM IMAGE

TOET60*9Eh9E660

| | | |
|---|---|---|
| −1 | 0 | 1 |
| −2 | 0 | 2 |
| −1 | 0 | 1 |

(a)EXAMPLE OF FILTER FOR DETECTION OF EDGE IN HORIZONTAL DIRECTION

| | | |
|---|---|---|
| −1 | −2 | −1 |
| 0 | 0 | 0 |
| 1 | 2 | 1 |

(b)EXAMPLE OF FILTER FOR DETECTION OF EDGE IN VERTICAL DIRECTION

| | | |
|---|---|---|
| −2 | −1 | 0 |
| −1 | 0 | 1 |
| 0 | 1 | 2 |

(c)EXAMPLE OF FILTER FOR DETECTION OF EDGE IN OBLIQUE DIRECTION

FIG. 33

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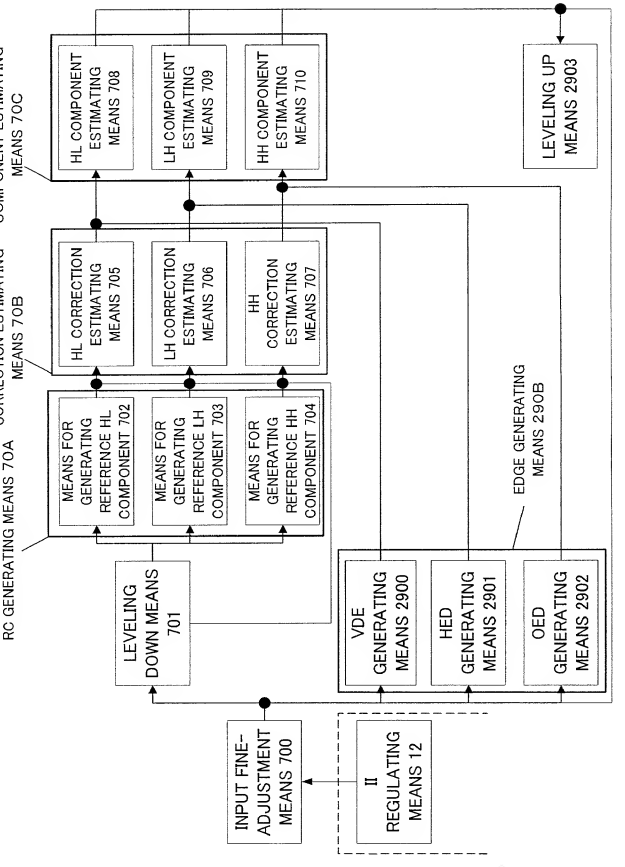
FIG. 34



TOEI60'9E49E660

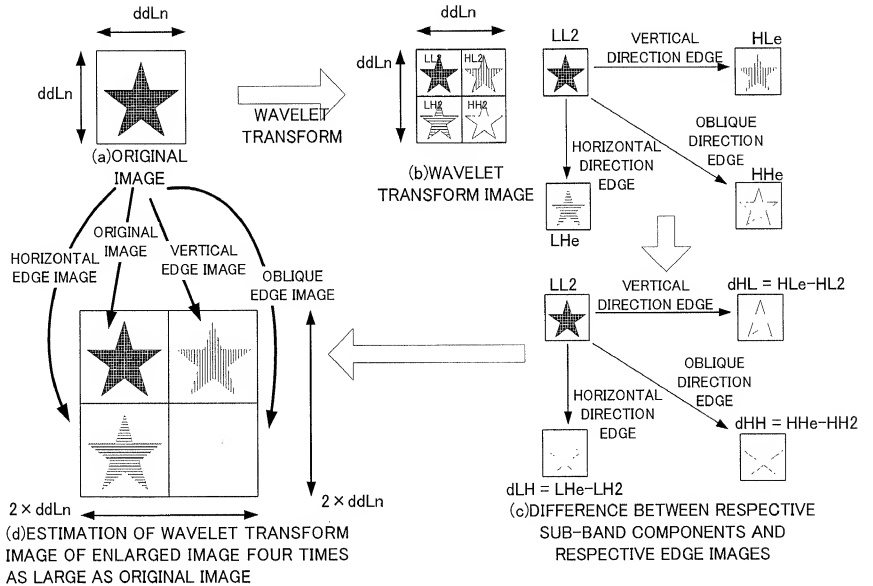



FIG. 35

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FIG. 36

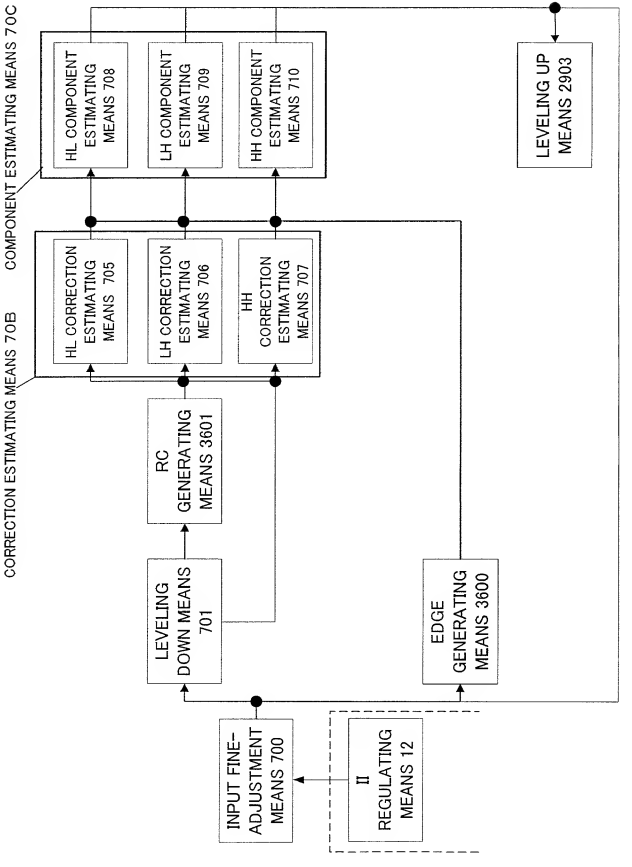

CORRECTION ESTIMATING MEANS 70B
COMPONENT ESTIMATING MEANS 70C
HL CORRECTION ESTIMATING MEANS 705
LH CORRECTION ESTIMATING MEANS 706
HH CORRECTION ESTIMATING MEANS 707
HL COMPONENT ESTIMATING MEANS 708
LH COMPONENT ESTIMATING MEANS 709
HH COMPONENT ESTIMATING MEANS 710
RC GENERATING MEANS 3601
LEVELING DOWN MEANS 701
EDGE GENERATING MEANS 3600
LEVELING UP MEANS 2903
INPUT FINE-ADJUSTMENT MEANS 700
Π REGULATING MEANS 12

FIG. 37

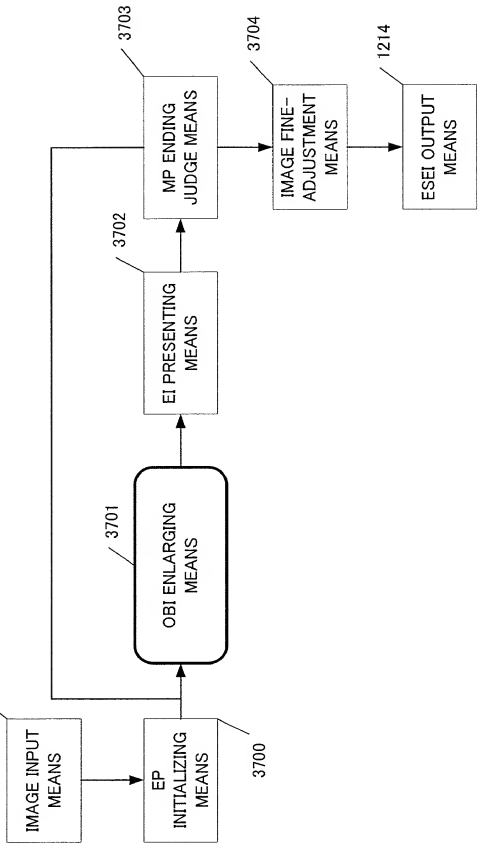
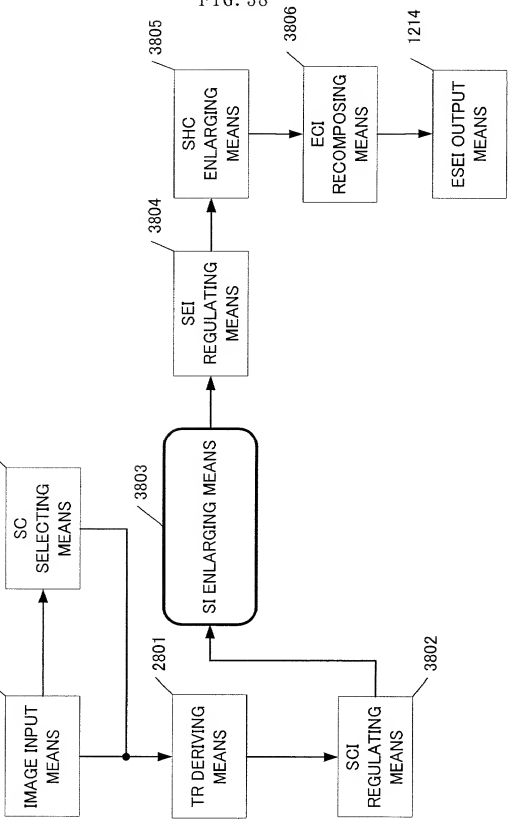

10
IMAGE INPUT MEANS
EP INITIALIZING MEANS
3700
OBJ ENLARGING MEANS
3701
EI PRESENTING MEANS
3702
MP ENDING JUDGE MEANS
3703
IMAGE FINE-ADJUSTMENT MEANS
3704
ESEI OUTPUT MEANS
1214

FIG. 38


10
IMAGE INPUT MEANS
2800
SC SELECTING MEANS
2801
TR DERIVING MEANS
3802
SCI REGULATING MEANS
3803
SI ENLARGING MEANS
3804
SEI REGULATING MEANS
3805
SHC ENLARGING MEANS
3806
ECI RECOMPOSING MEANS
1214
ESEI OUTPUT MEANS

TOET60'9E+9E660

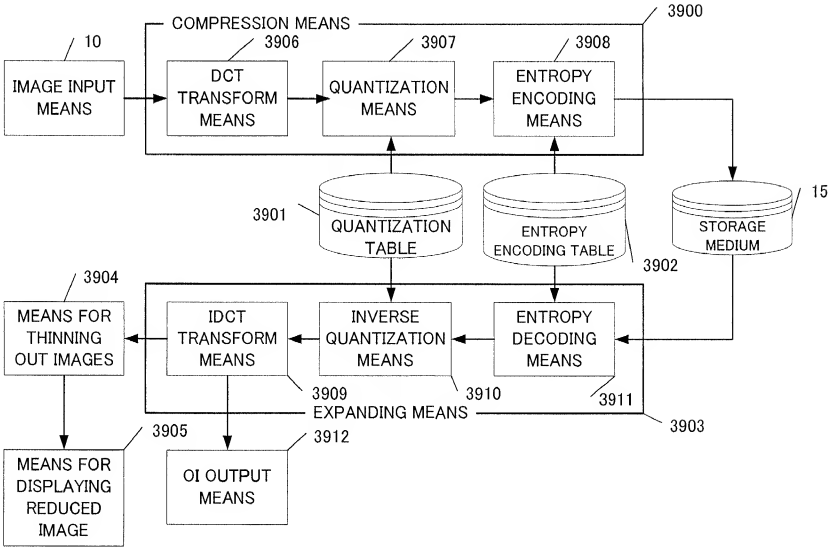



FIG. 39

09/536,436

EP01609.SE.PCT

FIG. 40

FIG. 41


FREQUENCY AREA
LOW
HIGH
LOW
HIGH
(a)ORIGINAL IMAGE
n
n
ORTHOGONAL TRANSFORM
(b)FREQUENCY COMPONENT OF ORIGINAL IMAGE
n
n
s×n
s×n
(c)ESTIMATED FREQUENCY COMPONENT OF ENLARGED IMAGE
0
0
0
INVERSE ORTHOGONAL TRANSFORM
(d)ENLARGED IMAGE
s×n
s×n

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FIG. 42
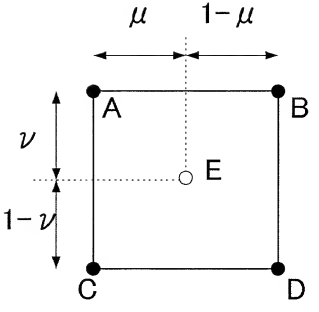
FIG. 43